International Journal of Linguistics, Literature and Translation (IJLLT)
ISSN: 2617-0299
www.ijllt.org

Metadiscourse Markers in English and Persian Scientific Texts

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ARTICLE INFO

Received: April 24, 2019
Accepted: May 27, 2019
Published: May 30, 2019
Volume: 1
Issue: 1

KEYWORDS

Metadiscourse Markers, Discourse, English Scientific texts, Persian Scientific Texts, Scientific Genre

ABSTRACT

Metadiscourse markers are aspects of a text which exclusively guide readers toward the meanings intended by the author. The present study aimed to investigate the organization of metadiscourse markers across scientific genre in Persian and English. It also attempted to explore the frequency of the two types of metadiscourse markers in English and Persian. The data for this study were supplied through different text types of scientific genre, such as biology, geology, chemistry, physics and mathematics. Out of the existing scientific textbooks in English and Persian, 20 books were randomly selected. The materials were originally written in English or Persian. In order to have ample instances of texts, 2 paragraphs of about 150 words were selected from each book. By analyzing the collected data, it was found that there is a relation between English and Persian in using metadiscourse markers. Both languages used high degree of metadiscourse markers, which contributed to their homogeneity in terms of metadiscourse usage. The findings also revealed that the average frequencies of the two types of metadiscourse are relatively different in Persian and English languages.

1. INTRODUCTION

Metadiscuorse features are those facets of a text which make the organization of the text explicit, provide information about the writer's attitude toward the text content, and engage the reader in the interaction. Metadiscourse markers, also sometimes called 'transitions', are a good way to show the reader how ideas in a sentence are connected to ideas in a previous sentence. One can think of metadiscourse like street signs that are telling the reader whether the text is continuing in the same direction it was going, or in a new direction. This paper explores the role of textual and interpersonal metadiscourse markers in scientific texts. The investigation aims at comparing two groups of scientific texts one in Persian and the other in English. The comparison was done in the case of metadiscourse markers. As Hyland (2005) states in his book on metadiscourse, "the term metadiscourse was coined by Zelling Harris in 1959 to offer a way of understanding language in use, representing a writer's or reader's attempts to guide a receiver's perception of a text"(3). The concept has been further developed by writers such as Williams (1981), Vande Kopple (1985) and Crismore (1989).
Metadiscourse was first defined by Williams (1981) as "writing about writing". Vande Kopple (1985) also referred to metadiscourse as "discourse about discourse or communication about communication".

Hyland (2004) maintained that metadiscourse help authors interact with their audience in order to communicate successfully with them. Moreover, Hyland (1998) contended that metadiscourse markers are integral to the text. In other words, they cannot be removed or changed at will. In a quantitative study, Hyland (1998) examined metadiscourse markers in 28 research articles and found 373 instances of metadiscourse in each research article. In another textual analysis, Hyland (1999) explored metadiscourse markers in 21 textbooks and found 405 instances of metadiscourse markers in each text, around one per 15 words. Hyland has concluded that metadiscourse play an important part in communication.

Crismore (1984) has defined metadiscourse as" discoursing about spoken or written discourse" (p.66). She has added that metadiscourse provides readers or listeners with direction rather than information. Metadiscourse is not a well-defined concept and consequently several definitions have been proposed (Vande Kopple 1985, 2002; Crismore, Fansworth1990; Markkanen et al. 1993; Luuka 1994; Bunton 1999; Hyland 2000, 2005;

Hyland, Tse 2004; Dafouz 2003). Crismore (1984: 280) asserts that the aim of metadiscourse is to 'direct rather than inform the readers.' Vande Kopple (1985, p.83; 1997, p.2) defines metadiscourse as 'discourse that people use not to expand referential material, but to help the readers connect, organize, interpret, evaluate, and develop attitudes towards that material.' Crismore (1983) defines metadiscourse as a level of discourse where the author intrudes into the ongoing discourse to direct rather than inform the reader. Similarly, Hyland (2005, p.3 believes that 'metadiscourse embodies the idea that communication is more than just the exchange of information, goods or services, but also involves the personalities, attitudes and assumptions of those who are communicating', and hence 'the writer is not simply presenting information about the suggested route, by just listing changes of direction, but taking the trouble to see the walk from the reader's perspective.' Metadiscourse is taken to be 'the cover term for the self-reflective expressions used to negotiate interactional meanings in a text, assisting the writer (or speaker) to express a viewpoint and engage with readers as members of a particular community' (ibid, p.46). Crismore, Farnswarth, Crismore and Farnswarth (1990, p.118) are also among those who have first warned about the fact that scientific writing is more than mere account of scientific facts expressed through a piece of writing. They embrace the belief that academic writing is a social perspective, involving interaction between writers and readers. Accordingly, writers and readers negotiate their personality, credibility; reader sensitivity and relationship to the message (see Hyland 2005). Metadiscourse has been investigated in different genres: textbooks (Crismore 1984; Hyland 1999, 2000), dissertations (Bunton 1999), student writings (Markkanen et al. 1993), science popularizations (Crismore, Fansworth 1990; De Oliveira, Pagano 2006), advertisements (Fuertes-Olivera et al. 2001), research articles (Myers 1989; Mauranen 1993; Salage-Meyer 1994; Luuka 1994; Valero-Garces 1996; Moreno 1997,199; Swales 1990; Hyland 1998,1999,2000,2001;Mur Duenas 2007; Faghih, Rahimpour 2009), university textbooks(Hyland 1994,1999,2000); casual conversation (Schiffrin 1980) and newspaper discourse (Le 2004; Dafouz-Milne 2008). It has also been investigated cross-culturally between English and Finnish (Markkanen et al. 1993; Mauranen 1993) and between English and Spanish (Valero Garces 1996). Indubitably, the advantages of metadiscourse are many. For instance, discourse structuring functions of metadiscourse guide readers through a text and help them organize content while reading, thus creating global comprehension (Crismore, 1989).

Hyland (2000, 2005) has provided the probably most comprehensive framework for the study of metadiscourse. He groups metadiscourse expressions into two macro-categories: interactive and interactional. Interactive expressions are used to organize propositional information in ways that a projected target audience is likely to find coherent and convincing. The interactional dimension concerns the ways writers conduct interaction by intruding and commenting on their message. These two macro-categories were previously referred to as textual and interpersonal by Halliday in the systemic functional grammar. The change of labels was put forward by [(Hyland 2004, 2005)], who claims that all metadiscourse is interpersonal 'in that it takes account of reader's knowledge, textual experiences, and processing needs <…>' [(Hyland, Tse2004, p.161)].

Metadiscourse has been recognized as one of the major rhetorical features and strategies in the production of a text (Hyland, 1998). In fact, it "is not indispensable stylistic device which authors can vary at will. It is integral to the contexts in which it occurs and is intimately linked to the norms and expectations of particular cultural and professional communities" (Hyland, 1998). Based on this view, ways of using metadiscourse might differ in different

languages and cultures. Several studies have discussed the positive effects of the presence of metadiscourse markers in texts. With reference to Halliday's (1985b) metafunctional theory of language, on the interpersonal level, Schiffrin (1980, p.231, as cited in Hyland, 2000, p.109) and Crismore (1989) both point out that metadiscourse allows written texts to take on some features of spoken language, and thus become more "reader-friendly". On the textual level, Crismore & Farnsworth (1990) and Crismore (1989) note that the discourse structuring functions of metadiscourse guide readers through a text and help them to organize content as they read, thus fostering global comprehension. Crismore further suggests that metadiscourse can promote critical thinking as readers are able to formulate their own opinions and compare them to those of the writer. The main research goal in the present paper is to establish points of similarities and differences between English and Persian languages and cultures. Therefore, this paper attempts not only to identify some of the characteristics of scientific texts but also to explore the possible cross-cultural variations regarding the use of metadiscursive elements in the texts written by Americans and Iranians.

2.RESEARCH QUESTION AND HYPOSTHESIS

Q: Is there a significant difference between English and Persian scientific texts with regard to metadiscursive elements?

H0: There is no significant difference between

English and Persian scientific texts with regard to

metadiscursive elements.

3. METHODOLOGY

3.1. Materials

Different text types of scientific genres such as biology, geology, chemistry, physics and mathematics comprise the data pool. 20 books are randomly selected, among many books in scientific texts in English and Persian. The selected books are originally written in Persian and English. In order to have ample instances of texts, 5 paragraphs are selected from each book.

3.2. Model of analysis

The present study uses Hyland's (2004) taxonomy of metadiscourse markers as a model of analysis. Hyland (ibid.) divides these markers into two broad categories, each one with a set of subcategories.

I. Interactive Markers: They enable the writer to manage the information flow so as to provide his preferred interpretations. They include the following subtypes:

1. Transitions: These markers mainly indicate: additive, contrastive, and consequential steps in the discourse. Some examples are: *in addition*, *but*, *thus*, *and*, etc.

2. Frame markers: They indicate text boundaries or elements of schematic text structure, like: *my purpose here is to*, *finally*, *to conclude*, etc.

3. Endophoric markers: They refer to information in other parts of the text and make the additional material available to the readers. Some examples are: *in section*, *see figure*, *noted above*, etc.

4. Evidentials: They refer to sources of information from other texts, such as: *X states*, *(Y, 2010)*, *According to X*, etc.

5. Code glosses: They help readers grasp functions of ideational material. They show the restatements of ideational information, like: *namely*, *such as*, *in other words*, *e.g.*, etc.

II. Interactional Markers: They involve the reader in the argument. They 'focus on the participants of the interaction and seek to display the writer's persona and a tenor consistent with the norms of the disciplinary community' [Hyland 2004: 139]. The interactional resources include:

1. Hedges: They withhold writer's full commitment to proposition. Examples: *might*, *about*, *perhaps*, *possibly*, etc.

2. Boosters: They emphasize force or the

writer's certainty in proposition.Examples: *it is clear that, in fact, definitely*, etc.

3. Attitude markers: They indicate the writer's appraisal or attitude to propositional information. Some examples are: *unfortunately, surprisingly, I agree*, etc.

4. Engagement markers: They explicitly refer to or build a relationship with the reader. Examples: *consider, you can see that, note that*, etc.

5. Self-mentions: They explicitly refer to authors' presence in terms of first person pronouns and possessives. Examples: *I, we, our, my, your*, etc.

3. PROCEDURE

To carry out the analysis, the selected texts are read and analyzed carefully for metadiscourse categories. The analysis is repeated after three months and the results are compared in order to validate the results. The findings are then subjected to statistical analysis by using chi-square in a null hypothesis. Finally, appropriate conclusions are drawn.

4. RESULTS AND DISCUSSION

This section aims at comparing the qualitative and quantitative nature of interactive and interactional metadiscourse markers used in scientific texts written by Persian and English native speakers. The following table demonstrates the frequency of these two categories of metadiscourse markers in Persian and English scientific texts and their total numbers and percentages.

To test the differences between Persian and English interactive metadiscourse markers, I ran the first chi-square test. In Table 2, the value of observed chi-square (x^2 = 15.97) is meaningful at α level (α = 0.05) with a degree of freedom of 4. This indicates that there is a significant difference between Persian and English in their use of interactive metadiscourse markers.

Level of significance = 9.488

The chart bar in Figure 1 displays that Persian scientific texts apply a higher number of interactive metadiscourse markers than do English ones (Persian, n = 730; English, n = 622).

A detailed look onto the subcategories of interactive metadiscourse reveals interesting cross-linguistic differences. Within the interactive metadiscourse markers, the numerical advantage of transitions in both languages over the rest of sub-categories responds to the organizational principles and the flow of information management. However, Persian authors utilize transitions much more frequently than did their English counterparts. It is found that transitions in Persian are used approximately three times more than the rest of subcategories. In English, transitions are approximately two times more than the rest of subcategories. Evidentials Persian texts are the second most frequent markers and they are more frequent than in English ones. Code glosses Persian scientific texts are more frequent than in English scientific texts. Frame and endophoric markers in English texts are more frequent than in Persian ones.

To test the differences between Persian and English interactional metadiscourse markers, the second chi-square test is run. As shown in Table 3, the value of observed chi-square (x^2 = 13.10) is significant at α level (α = 0.05) with a degree of freedom of 4. The difference in data is not due to chance and therefore the null hypothesis is rejected. Data indicate that Persian and English writers of scientific texts use interactional metadiscourse markers significantly differently. This is best demonstrated by the chart bar in Figure 2.

Level of significance = 9.488

According to Figure 2, Iranian authors use a higher number of interactional meta- discourse markers than do the English ones (Persian, n = 513; English, n = 431). There is also a significant difference between the uses of all subtypes of the interactional markers. Although far more recurrently employed in Persian, findings disclose that hedges were the most frequently used in both languages among the interactional metadiscourse subtypes: Persian (n = 311) and English (n = 237). The possible interpretation is that the mitigated points of view and linguistic facts are combined in scientific texts so as to attain maximum effect. After hedges, boosters were the second most frequent metadiscourse marker in Persian. Conversely, the second most frequent marker in English was self-mention. Hedges, boosters, attitude markers and engagement markers in Persian texts were more frequently utilized than in English texts. Engagement markers in both languages displayed the lowest frequency within the interactional metadiscourse subtypes. This possibly suggests that these markers are not favored by both groups of writers. Attitude markers held the third position in Persian scientific texts and the fourth position in English scientific texts in terms of quantitative use.

The analysis of total corpus shows that there are 2,296 metadiscourse elements in 49,455 words, that is, there is one metadiscourse element in almost 21 words. This is almost one per 23 for the English corpus (total English corpus 23,903 words), and one in almost 20 for the Persian corpus (total Persian corpus 25,552 words). In other words, the total percentage of metadiscourse use for the English language is 4.4 while it is 4.86 for the Persian language (Table 4).

The percentages in Table 4 are calculated on the basis of the total number of metadiscourse markers identified in relation to the total number of words used in English and Persian corpora. It seems clearly that linguistics research articles in both languages contain a relatively large number of metadiscourse markers. This underscores the importance of the interactive and interactional organization of discourse. Therefore, it is implausible to consider metadiscourse markers marginal to the discourse (*cf* (Crismore, Farnsworth 1990).

Further analysis of the two dimensions of metadiscourse in Table 4 shows that Persian makes use of interactive category more than interactional category (58.72% vs. 41.27%, respectively). The English language also uses interactive markers more than interactional elements (59.06% vs. 40.93%, respectively).

This finding may indicate the significance of textual congruity over explicit interpersonal relations with the audience. Persian and English both relied more on interactive markers than on interactional ones. Persian manages to overtake English in both the interactive category and in the interactional category. On the whole, the statistical analysis shows that the differences between the two languages are statistically significant (See Table 4).

The fact that the difference between the two languages is more salient in the use of interactive markers may show that Persian tends to go to greater lengths establishing coherence in the text, hence providing more guidance for the reader to comprehend the purpose of the text. Persian remains slightly more faithful to the involvement of the reader in the text (more use of interactional markers), that is, the writers in Persian are inclined to have a closer association with the reader.

As Table 1 shows, English and Persian differ in the way they prioritize the subcategories of metadiscourse makers. Persian tends to capitalize maximally on the transitions (46.33) and minimally on the endophoric markers (0.88). On the contrary, English seems to maximally rely on the transitions

(39.03) and minimally on the engagement markers (0.28). It does seem reasonable that Iranian and English writers of scientific texts do their best to maximally connect their propositions by heavily relying on transitions. Iranian writers rarely tend to refer to information in other parts of the texts. English writers rarely tend to explicitly refer to or build relationship with the reader through using engagement markers.

It has been discovered that writers who are native speakers of Persian and English, strive to tone down their theories, ideas and claims. In other words, they try to signal tentative assessments of propositional information. They also try to 'convey collegial respect for the views of colleagues' (Hyland 2000). Findings of this study do not support Hyland's (ibid.) suggestion that hedges are highly frequent in academic writing and are more frequent than one in every 50 words. Our data demonstrates that one instance of hedging appears in every 77 words in Persian and in every 100 words in English.

Boosters are used to 'mark involvement and solidarity with an audience' (Hyland 1998) when expressing conviction and discussing issues that are divisive. When we compare the frequency of occurrence of boosters in Persian texts to that of English ones, figures clearly indicate that Iranian writers tend to use them much more than English writers (one booster per 327 words in Persian and one per 426 in English). In Persian scientific texts, the occurrence of boosters seems quite normal.

According to Crismore et al. (1993, p.53), 'attitude markers express writers' affective values – their attitudes towards the propositional content and/or readers rather than commitment to the truth-value. At times writers use attitude markers to show their attitudes about the style of the text or about themselves as the writers of the texts. The attitude expressed can be of many different types: expressions of surprise, of thinking that something is important, or of concession, agreement, disagreement, and so on.' In Persian, there is one attitude marker per 405 words, in English one per 583. Persian writers are more inclined towards using attitude markers in their writings in comparison to their English colleagues. This tendency is, however, not easy to explain and all endeavors to account for it should include a variety of cultural, social, and psychological factors embedded in the two writing cultures. Attitude markers appeared in different morphosyntactic forms in both Persian and English. It seems that writers of scientific texts of different cultural backgrounds use different strategies for expressing their attitudes and determining how frequently they use attitude markers. Given the percentage of hedges in both Persian and English scientific texts, it seemed that there was one attitude marker for about five hedges. Writers of both languages, therefore, seemed to use attitude markers to guide their readers in understanding their opinions, intentions, and points of view. They also held some kind of control over the interpretation of the presented content, and suggested, sometimes subtly and sometimes obviously, the way they want their statements to be interpreted and comprehended.

Evidentials held the third position in English scientific texts but the fifth position in Persian ones. Evidentials in English scientific texts (15.59) are approximately two times more frequent than in Persian ones (8.08). This suggests that English writers of scientific texts provide a stronger ground for documentation of the information.

Hyland (2001, p.223) argued that the use of self-mention is important in academic writing. He pointed out that the 'points at which writers choose to announce their presences in the discourse are those where they are best able to promote themselves and their individual contributions.' Despite the fact that impersonality is used to create distance between the author and the ideas

expressed in the text, thus conveying an impression of objectivity in scientific texts, the use of authorial presence is a method for promoting the author's role as the individual responsible for the creation of the text. By using more self -mentions, writers of English scientific texts tended to project a more powerful authorial identity than writers of Persian scientific texts.

Code glosses were not very frequent markers in English and Persian scientific texts. In both languages, they hold the seventh position among overall metadiscourse markers. There was no actually significant difference between the two languages. Code glosses are used to provide exemplification, restatement, clarification and assured reading. This possibly suggests that the texts under analysis were clear and straightforward and their authors cared little about ensuring the intended reading and anticipating the needs of readers. This paucity in Persian is motivated and expected by the repetitive nature of Persian writings. Iranian writers rely very heavily on circularity and repetitions which ensure clarity and explicit reading as intended.

English writers of scientific texts used more frame markers (n = 52) than Iranian writers did (n = 33) to explicitly refer to text boundaries through introducing shifts and preparing for the next step in the text. Iranian writers of scientific texts used more engagement markers than English did. So they were more explicit in addressing their audience. Endophoric markers enabled readers to understand the macro-structure of the articles in both languages.

5. CONCLUSION

The present study has tried to perform an inter/intra-lingual contrastive analysis between Persian and English. It has used a corpus of scientific texts.

The analysis allowed us to draw some conclusions. Findings reveal that metadiscourse markers play a very significant role in scientific texts both in English and Persian. From a statistical perspective, Persian scientific texts' more intensive usage of interactive and interactional metadiscourse markers than English ones' is significant. Compared with English, Persian drew more on interactive resources, which shows that Persian puts rather a premium on textuality at the expense of reader involvement, hence, being comparatively less reader responsible than English. Persian, in this respect, expressed a clearly impersonal voice which is consistent with the positivist portrayal of science. English scientific texts seemed to be more reader-involved and more reader-responsible. Although the differences can be seen in all five main functions of interactive metadiscourse, the most significant differences occur in the transition from one subtheme of the text to the other. Both Persian and English used interactive resources more than interactional ones, emphasizing the significance of text coherence over interpersonal functions of language in the academic genre. Research in this paper heightened our understanding of the cultural differences between Persian and English concerning the use of metadiscourse in scientific texts. In general, it was found that there was an exaggerated tendency among Iranian writers to use metadiscourse markers. This is justifiable in that Iranian writers usually pay as excessive attention to the formal aspects of the text as to the content.

This contrastive study may have a pedagogical implication. For an Iranian author writing in the field of scientific texts to be maximally effective and to achieve worldwide fame, s/he must increase his or her awareness of the writing conventions in English.

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Table 1: The frequency of interactive and interactional metadiscourse markers in Persian and English

Categories		Persian		English	
		Total No.	%	Total No.	%
Interactive	Transitions	576	46.33	411	39.03
	Frame markers	33	2.65	52	4.93
	Endophoric markers	11	0.88	20	1.89
	Evidentials	59	4.74	97	9.21
	Code glosses	51	4.10	42	3.98
Interactive	Hedges	311	25.02	237	22.50
	Boosters	70	5.63	56	5.31
	Attitude markers	63	5.06	41	3.89
	Engagement markers	17	1.36	3	0.28
	Self-mentions	52	4.18	94	8.92
∑		1243		1053	

Table 2: Results of chi-square test of Iranian and English writers' use of interactive metadiscourse markers

p	df	Value	
0.005	4	15.97	X < 0.05
		1352	n

Table 3: Results of chi-square test of Persian and English writers' use of interactional metadiscourse markers

p	df	Value	
0.01	4	13.10	X < 0.5
		944	n

Table 4: The analysis of metadiscourse markers in English and Persian

	Total Words	Metadiscourse Frequency	Interactive	Interactional	Total
English	23,903	1053	2.6	1.8	4.4
Persian	25,552	1243	2.8	2.0	4.86
Z-test	******	******	15.97	13.10	$X^2 = 29.04$

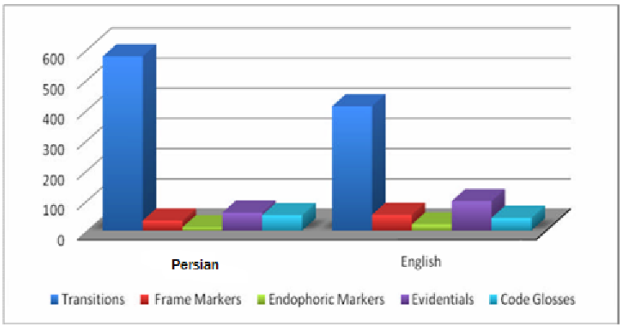

Fig. 1: Interactive metadiscourse markers in Persian and English

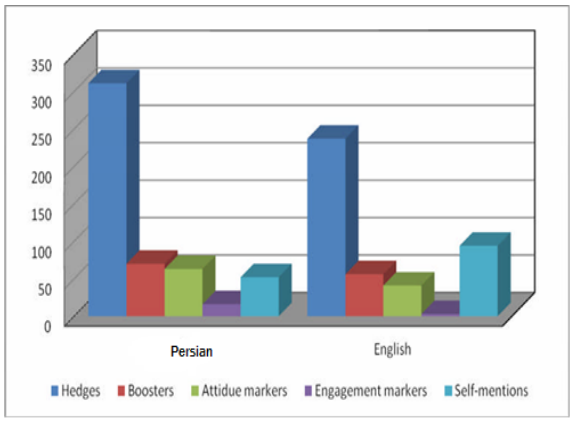

Fig. 2: Interactional metadiscourse markers in Persian and English